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International Specialists in the Environment

MEMORANDUM

DATE: June 14, 1990

TO: Neil Thompson, Remedial Project Manager, EPA, Region 10

FROM: Lyle Diediker, Site Manager, E & E, Seattle

SUBJ: Domestic Well Monitoring Program at
Colbert Landfill - ZR6000

In response to your telephone request on June 11, 1990 for a Quality Assurance Guidance Brief, the attached "Requirements for the Domestic Well Monitoring Quality Assurance Program" was prepared. This will provide Spokane County the necessary framework for developing a sound program that will meet the objectives of the Consent Decree.

There are no specifics relative to technical recommendations, since their program is a continuation of the one identified in the Consent Decree, and they did not submit any specifics of their current program. Providing those specifics would entail addressing all aspects of their sampling program. It may be more appropriate to provide a review of the project plan as it is developed. If the county submits another project plan for EPA review, we will be happy to provide the necessary expertise for the review.

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**REQUIREMENTS FOR
DOMESTIC WELL MONITORING
QUALITY ASSURANCE PROGRAM**

The principle component of a Quality Assurance Program Plan is established data quality objectives.

The domestic groundwater sampling program defined in the Scope of Work (SOW) of the Consent Decree provides the basis for developing data quality objectives. The SOW identifies the volatile organic compounds of concern and the performance standards which incorporate health protection levels as defined by Federal Maximum Contaminant Levels (MCLs) and maximum acceptable concentrations (MACs) based on cancer risk factors. These levels are to be used in the decision process for determining the necessity of alternate drinking water supplies. Since it is the county's responsibility, under review of the Colbert Landfill Groundwater Sampling Committee, to make this decision, an appropriate program must be established to assure that the data obtained from sampling and analysis will be of sufficient quality to be used in this decision making process. The basic steps for developing a Quality Assurance Project Plan are presented below. Also presented is the decision logic for using data collected under the Project Plan for determining the need for an alternate water supply as defined in the SOW.

Step 1 The first step in developing an environmental data collection program is to identify the data quality objectives (DQOs). These are quantitative and qualitative statements describing the quality of data needed to support a specific environmental decision or action. The decision criteria are clearly defined in the Scope of Work (SOW) in terms of performance standards of volatile compounds of concern.

Step 2 In developing the DQOs, the "PARCC" factors are defined to establish the standard operating checks and balances used to evaluate and validate data. These quality control factors are defined on the basis of DQOs as follows:

Precision - The measure of agreement among repetitive measurements of the same sample.

Accuracy - The degree of agreement of a measurement with an accepted standard reference.

Representativeness - The degree to which data accurately represents a particular characteristic of a population of environmental parameters.

Completeness - The measure of how the amount of valid data obtained compare to the expected amount.

Comparability - The measure of the confidence in comparing one data set with another.

Step 3 The next step is to develop a Quality Assurance Project Plan (QAPP) which defines the requirements. It should be prepared on the basis of elements presented in EPA's "Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans" (QAMS-005/80):

- 1) Appropriate approval page
- 2) Table of contents
- 3) Project description
- 4) Project organization and responsibility
- 5) QA objectives for measurement of data in terms of precision, accuracy, completeness, representativeness, and comparability
- 6) Sampling procedures
- 7) Sample custody
- 8) Calibration procedures and frequency
- 9) Analytical procedures
- 10) Data, reduction, validation and reporting
- 11) Internal quality control checks and frequency
- 12) Performance and system audits and frequency
- 13) Preventive maintenance procedures and schedules
- 14) Specific routine procedures to be used to assess data precision, accuracy and completeness of specific measurement parameters involved
- 15) Corrective action
- 16) Quality assurance reports to management

If a particular element is not relevant to the project, a brief explanation of why the element is not relevant should be included.

Step 4 Sampling activities are performed in accordance with the procedures set forth in the Project Plan. If modifications to the stated procedures are necessary, appropriate documentations must be made in the field. Alternate procedures must meet the requirements of the stated DQOs. Included in the sampling activities are appropriate quality control checks (i.e., blanks, duplicates, etc.) and field parameter measurements (i.e., conductivity, temperature, etc.).

- Step 5 Laboratory analysis is performed by a laboratory(s) that is qualified to meet the project DQOs, perform the analysis within specified holding times, and perform the analysis within specified detection limits. The laboratory should also be capable of providing documentation relative to internal quality control checks, control limits and corrective actions that are commensurate with the project's DQOs.
- Step 6 The laboratory data is reviewed and validated to assure that it can be used for decision making based on the stated DQOs. This may include, but is not limited to, reviewing, holding times, surrogate percent recovery, matrix spike/duplicates, blank analysis, GC/MS unit criteria, and initial and continuing calibration.

Applicable EPA References:

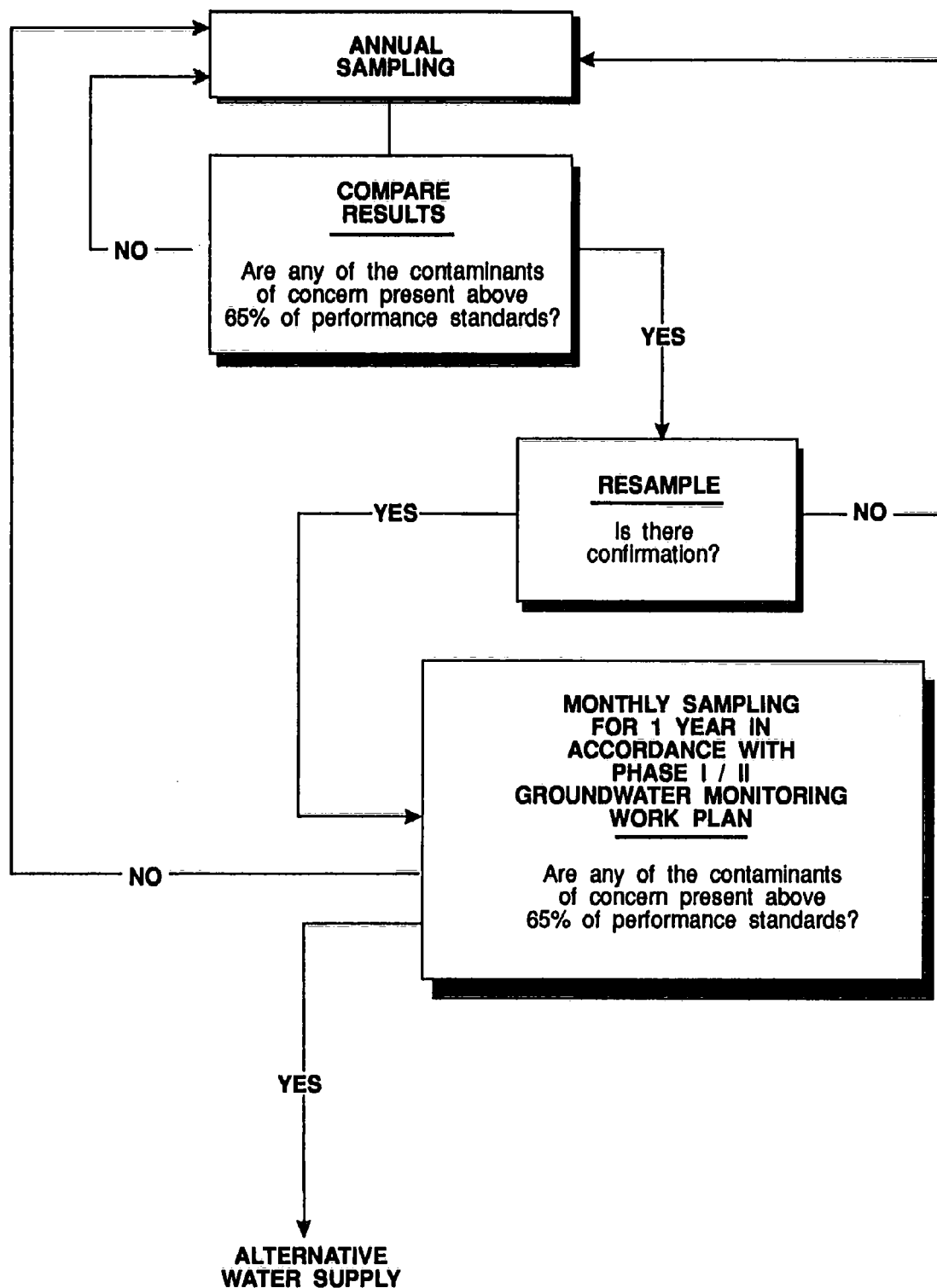
"Interim Guidelines and Specifications for Preparing Quality Assurance Project Plans," 1980, Office of Monitoring Systems and Quality Assurance, (QAMS-005/80).

"Removal Program - Quality Assurance/Quality Control Interim Guidance - Sampling QA/QC Plan and Data Validation Procedures," Feb. 1989, OSWER Directive 9360.4-01.

"Guidance for Preparation of Combined Work/Quality Assurance Project Plans for Environmental Monitoring," May 1984, Office of Water Regulations and Standards.

"You and Quality Assurance in Region 10," March 1988, Regional Quality Assurance Management Office.

"Development of Data Quality Objectives," July 1986, Quality Assurance Management Staff.



DECISION LOGIC FOR DOMESTIC WELL MONITORING